



## Ramsey Shielded Test Enclosure Ethernet and USB I/O Connectors Overview

There currently are two solutions for getting the Ethernet and USB 2.0 signals into and out of the shielded test enclosures, shielded fiber-optic transceiver systems (Fiber-Optic) and conventional shielded and filtered connectors with adapters (Hard Wired).

The Fiber-Optic transceiver systems work very well, maintain 100 dB of shielding effectiveness and allow the data to pass at the full data rate. The transceiver system does add a delay into the data stream due to the two conversions (digital to optic and optic back to digital), this may cause problems depending on the testing you are performing. The transceiver systems are not cheap.

The Hard Wired conventional shielded and filtered connectors with adapters work well also and cost much less than the transceiver systems. Choosing the correct connector is important, mainly the DB9 connector. Most common are the USB or RJ45 adapters that are attached to both sides (inside & outside). As the speed of the data rate increases, your hard wired filtering options decrease. See Common Device Data Rates Chart below.

### **CONN67 1000 PF DB9**

**Communication: Serial RS-232, NO USB, Dial-up Modem**

Can be used if Data Rate does not exceed 115 Kbit/s or 58 KHz

Line Attenuation is 75 dB min.

External RF shielded cables recommended

### **CONN207 100 PF DB9 (Ramsey Recommended)**

**Communication: Serial RS-422, USB 1.x, Ethernet up to 100 base-x, 1000 base-x (reduced speed)**

Can be used if Data Rate does not exceed 100 Mbit/s or 50 MHz

Line Attenuation is 60 dB min.

External RF shielded cables highly recommended

### **CONN278 10 PF DB9**

**Communication: Serial ATA, USB 1.x & 2.0, Ethernet up to 1000 base-x**

Can be used if Data Rate does not exceed 1.2 Gbit/s or 600 MHz

Line Attenuation is 30 dB min.

External RF shielded cables are required and grounding both ends is critical

Comes with a RF shielded cap to maintain shielded effectiveness, when not in use

### **CONN314 SHIELDED USB 1.x OR 2.0 ONLY, NO FILTERING (Ramsey Recommended)**

**Communication: Any Speed supported by metallic wire**

Line Attenuation is 0 dB

External RF shielded cables are required and grounding both ends is critical

**This is not meant to be the complete list of connectors or adapters available, but just a quick overview. Please contact R. A. Mayes at 1-800-742-9447 for your particular requirement.**



COMMON DEVICE DATA RATES		
CONNECTION	BITS	BYTES
<b>Modems</b>		
Modem 28.8k	28.8 kbit/s	2.88 kB/s
Modem 33.6k	33.6 kbit/s	3.36 kB/s
Modem 56k	53.3 kbit/s	5.33 kB/s
<b>ISDN</b>		
64k ISDN	64.0 kbit/s	8 kB/s
128k dual-channel ISDN	128.0 kbit/s	16 kB/s
<b>COMPUTER INTERFACES</b>		
Serial RS-232 commonly	9.6 kbit/s	960 B/s
Serial RS-232 max	230.4 kbit/s	23.0 kB/s
USB Low Speed	1536 kbit/s	192 kB/s
Parallel (Centronics)	8.0 Mbit/s	1.0 MB/s
Serial RS-422 max	10.0 Mbit/s	1.25 MB/s
USB Full Speed	12.0 Mbit/s	1.5 MB/s
SCSI 1	12.0 Mbit/s	1.5 MB/s
Fast SCSI 2	80 Mbit/s	10 MB/s
Fast Wide SCSI 2	160 Mbit/s	20 MB/s
Ultra DMA ATA 33	264 Mbit/s	33 MB/s
Ultra Wide SCSI 40	320 Mbit/s	40 MB/s
FireWire (IEEE 1394) 50	400 Mbit/s	50 MB/s
USB Hi-Speed	480 Mbit/s	60 MB/s
Ultra DMA ATA 66	528 Mbit/s	66 MB/s
Ultra-2 SCSI 80	640 Mbit/s	80 MB/s
FireWire (IEEE 1394b)	800 Mbit/s	100 MB/s
Ultra DMA ATA 100	800 Mbit/s	100 MB/s
Ultra DMA ATA 133	1064 Mbit/s	133 MB/s
PCI 32/33	1064 Mbit/s	133 MB/s
Serial ATA	1200 Mbit/s	150 MB/s
Ultra-3 SCSI 160	1280 Mbit/s	160 MB/s
Fibre Channel	800 or 1600 Mbit/s	100 or 200 MB/s
AGP 1x	2128 Mbit/s	266 MB/s
Serial ATA (SATA300)	2400 Mbit/s	300 MB/s
Ultra-320 SCSI	2560 Mbit/s	320 MB/s
PCI Express (x1 link)	4000 Mbit/s	500 MB/s

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AGP 2x	4256 Mbit/s	532 MB/s
PCI 64/66	4264 Mbit/s	533 MB/s
Ultra-640 SCSI	5120 Mbit/s	640 MB/s
AGP 4x	8512 Mbit/s	1064 MB/s
PCI-X 133	8528 Mbit/s	1066 MB/s
InfiniBand	10.00 Gbit/s	1.25 GB/s
PCI Express (x4 link)	16.00 Gbit/s	2 GB/s
PCI-X DDR	18.064 Gbit/s	2.133 GB/s
AGP 8x	18.024 Gbit/s	2.128 GB/s
HyperTransport (800MHz, 16-pair)	51.2 Gbit/s	6.4 GB/s
PCI Express (x16 link)	64 Gbit/s	8 GB/s
<b>WIRELESS</b>		
IrDA-Control	72 kbit/s	9 kB/s
Bluetooth 1.1	1000 kbit/s	125 kB/s
802.11 legacy 0.125	2000 kbit/s	250 kB/s
Bluetooth 2	3 Mbit/s	375 kB/s
RONJA free source optical wireless	10.00 Mbit/s	1.25 MB/s
802.11b DSSS 0.125	11 Mbit/s	1.375 MB/s
802.11b+ non-standard DSSS 0.125	44.0 Mbit/s	5.5 MB/s
802.11a 0.75	54.00 Mbit/s	6.75 MB/s
802.11g DSSS 0.125	54.00 Mbit/s	6.75 MB/s
<b>MOBILE TELEPHONE INTERFACES</b>		
GSM CSD	2400 to 14400 bit/s	300 to 1800 B/s
HSCSD upstream	14.4 kbit/s	1800 B/s
HSCSD downstream	43.2 kbit/s	5.4 kB/s
GPRS upstream	28.8 kbit/s	3.6 kB/s
GPRS downstream	57.6 kbit/s	7.2 kB/s
UMTS downstream	1920 kbit/s	240 kB/s
<b>LOCAL AREA NETWORK</b>		
LocalTalk	230.4 kbit/s	28.8 kB/s
ARCNET (Standard)	2.5 Mbit/s	0.3125 MB/s
Token Ring (Original)	4.16 Mbit/s	0.52 MB/s
Ethernet (10base-X)	10 Mbit/s	1.25 MB/s
Token Ring (Later)	16 Mbit/s	2.0 MB/s
Fast Ethernet (100base-X)	100 Mbit/s	12.5 MB/s
FDDI	100 Mbit/s	12.5 MB/s
Gigabit Ethernet (1000base-X)	1 Gbit/s	125 MB/s
<b>MEMORY INTERCONNECT BUSES / RAM</b>		
PC66 SDRAM	4264 Mbit/s	533 MB/s

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PC100 SDRAM	6400 Mbit/s	800 MB/s
PC133 SDRAM	8528 Mbit/s	1066 MB/s
PC1600 DDR-SDRAM	12.8 Gbit/s	1.6 GB/s
PC2100 DDR-SDRAM	16.8 Gbit/s	2.1 GB/s
PC2700 DDR-SDRAM	21.6 Gbit/s	2.7 GB/s
PC3200 DDR-SDRAM	25.6 Gbit/s	3.2 GB/s
PC800 RDRAM (single-channel)	12.8 Gbit/s	1.6 GB/s
PC800 RDRAM (dual-channel)	25.6 Gbit/s	3.2 GB/s
PC1066 RDRAM (single-channel)	16.8 Gbit/s	2.1 GB/s
PC1066 RDRAM (dual-channel)	33.6 Gbit/s	4.2 GB/s
PC1200 RDRAM (single-channel)	19.2 Gbit/s	2.4 GB/s
PC1200 RDRAM (dual-channel)	38.4 Gbit/s	4.8 GB/s